

P80-022  
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UNIVERSITY OF TORONTO  
UNIVERSITY EXTENSION

*Session 1957-58*

Course in  
**PHYSICAL CHEMISTRY**

*Application forms and course literature  
may be obtained by writing*

THE DIRECTOR,  
University Extension,  
65 St. George St.

UNIVERSITY OF TORONTO

*or by telephoning*  
WA. 8-8611  
*Locals 304, 308, 526, 527*

*sponsored by the*  
CHEMICAL INSTITUTE OF CANADA  
TORONTO SECTION

## PHYSICAL CHEMISTRY

### WEDNESDAY EVENINGS

### 20 LECTURES

This Course, which is offered in co-operation with the Chemical Institute of Canada, Toronto Section, has been designed for graduate chemists and chemical engineers. It is a refresher course and is one of the series sponsored by the Institute and given yearly through the Department of University Extension. The programme of lectures has been arranged by a staff member of the Department of Chemistry, University of Toronto. Topics which will be covered are: Atomic Theory, Spectra, Thermodynamics, Cases, Liquids, Solids, Equilibria, and Kinetics.

LECTURER: Dr. John C. Polanyi,  
Department of Chemistry,  
University of Toronto.

TIME: Wednesdays, 7.30 p.m., commencing  
October 9th.

PLACE: Room 2034, Wallberg Building.

FEE: \$30.00.

#### REGISTRATION:

By mail or in person at Room 108, 65 St. George St.  
In order to accommodate students and enable them to enrol during the evening, registrations will be taken—

Thursday,	September 12th
Tuesday,	September 17th
Thursday,	September 19th
Tuesday,	September 24th
Thursday,	September 26th
Tuesday,	October 1st

evenings, from 7.30 to 9 p.m., in the Wallberg Building,  
corner St. George and College Streets.

## PROGRAMME OF LECTURES

*October 9th to December 11th*

*January 8th to March 12th*

#### ATOMS:

The electron. The atom. Electronic structure of atoms.  
Electronic theory of valence.

#### SPECTRA:

Atomic spectra. Molecular spectra.

#### THERMODYNAMICS:

First law. Thermochemistry. Second law.

#### GASES:

Kinetic theory. Molecular velocities. Molecular collisions.  
Vapour density. Molar heat capacity. Quantum  
theory of heat capacity.

#### LIQUIDS:

Liquefaction of gases. Latent heat of vaporization.  
Clausius-Clapeyron equation. Trouton's law.  
Phase rule.

#### SOLIDS:

Crystal structure. X-ray diffraction. Rotating crystal  
method. Powder method. Specific structures. Lattice  
energy. Heat capacity of solid.

#### EQUILIBRIA:

Equilibrium constant. Activities. Free energy change.  
van't Hoff equation. Experimental techniques.  
Particular examples.

#### KINETICS:

Order of reaction. Experimental techniques. Pyrolysis.  
Photolysis. Theory of reaction rates in the gas phase  
and in solution.